

Work Order ID 63538

Thursday, November 04, 2010 9:25:29 AM



Page 1

Item ID: D212-664-201

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 11/4/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 11/19/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: *AL*

Date: *10-11-04* Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start



Stop



Sequence ID/ Work Center ID.	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
---------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D212-664-241

Rev D

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP-D212-664-201 CHG003

8016129

OK for BGR 10/11/30

110

0.00



Pick Kit

Packaging

Memo

0.00

Packaging

Packaging

DP

10-11-17

120

0.00



BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D212-664-241 using CNC bender program 212-aft

DP

10-11-17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

130

QC15- Crosstube Dimensional Check

0.00



QC

Memo

0.00

Quality Control

140

Crosstubes

0.00



Crosstubes

Memo

0.00

Crosstubes

1-Drill pilot holes in tube as per Dwg D212-664-241 using drill Jig DT8550, DT8551, drill table DT8577 and locate tower holes #8 as per QSI0010.

2-Ream hole to finish size in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-241

4-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241

SAD
10-11-17
SAD
10-11-18

G

1

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Run Start

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

Chemical Conversion Coat as within 24 hours of bending and drilling

SAD
10/11/12

①

160

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

8/10/11/12

170

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8/10/11/12

②

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Customer:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start
Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210  SprayPaint	Spray Painting per QSI005 4.2 SprayPaint	0.00				<u>ml</u>	<u>10</u>	<u>11</u>	<u>24</u> (1)
	Memo	0.00							
	1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2								
	PRIME: Start Time: <u>8:00</u> Finish Time: <u>9:00</u>								
	PAINT: Start Time: <u>2:00</u> Finish Time: <u>3:30</u>								
220  QC	QC14- Inspect Spray Paint	0.00							
	Memo	0.00							
	Then, Wrap in plastic bag to protect from scratches								

21 10-11-25

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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
250	Pick Kit	0.00							
	Packaging								
	Memo	0.00							
	Packaging								
260	QC4- 100% Inspect kits for completeness	0.00							
	QC								
	Memo	0.00							
	Quality Control								
270	Packaging	0.00							
	Packaging								
	Memo	0.00							
	Identify and pack for shipping as per PPP D212-664-201								

10/11/29 sp

④

Loc 103
R10 B

10/11/29 sp

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

280

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

OK 10/11/30 [Signature]

ME
10-11-29

W/O:		WORK ORDER CHANGES					
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Picklist Print

Thursday, November 04, 2010 9:25:34 AM

Page 1

Work Order ID: 63538

Parent Item: D212-664-201

Parent Item Name: Crosstube Aft



Start Date: 11/4/2010

Required Date: 11/19/2010

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:E 04.02.16 Reformat K/DS
 IPP Rev:F 06-03-29 Remove Comments on Pick List JLM
 IPP Rev:G 07-04-30 As per Rev C JLM
 IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D212-664- 201TRNRevC		Manufactured	No			110	Each	0.0000	1				
Crosstube Turning Detail													
D3595-063-530		Manufactured	No			230	Each	99.0000	2	2			
RUBBER CUSHION													

B62609

① 11/10-11-17

M 10-11-25

Location	Loc Qty	Loc Code
FP	30	
50030	12	
51776	18	
LG	69	
59581	35	
63407	34	

D2940-1



Support

Manufactured No

230 Each

31.0000

2

2

M 10-11-25

Location	Loc Qty	Loc Code
LG	31	
45203	1	
57338	10	
60271	20	

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Page 2

Work Order ID: 63538

Parent Item: D212-664-201

Parent Item Name: Crestube Aft

Start Date: 11/4/2010

Required Date: 11/19/2010

Start Qty: 1.00

Required Qty: 1.00

MS21920-28

Purchased

No

230

Each

95.0000

4

4



Clamp(per MIL-DTL-8783C)

Location

Loc Qty

Loc Code

FG

5

105884

5

LG

90

114749

40

116039

50

D3428-1

Manufactured

No

250

Each

3.0000

1

1



Placard

Location

Loc Qty

Loc Code

ST096

3

62096

3

MS21042L6

Purchased

No

250

Each

173.0000

6

6



Nut

Location

Loc Qty

Loc Code

ST300

173

111578

4

114495

1

115300

168

AN960JD616

NAS1149D0663J

Purchased

No

250

Each

0.0000

18

18



Washer

ml 10.11.25

B63978 10/11/29SL

10/11/29SL

MA5698 10/11/29SL

Thursday, November 04, 2010 9:25:34 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
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Thursday, November 04, 2010 9:25:34 AM

Page 3

Work Order ID: 63538

Parent Item: D212-664-201

Parent Item Name: Crossstube Aft

Start Date: 11/4/2010

Required Date: 11/19/2010

Start Qty: 1.00

Required Qty: 1.00

AN6-40A

Purchased

No

250

Each

87.0000

4

4



Bolt



10/11/29 S

Location

Loc Qty

Loc Code

ST343

87

112828

1

114283

6

115300

60

115905

20

AN6-41A

Purchased

No

250

Each

52.0000

2

2



Bolt



10/11/29 S

Location

Loc Qty

Loc Code

ST344

52

113288

22

115316

30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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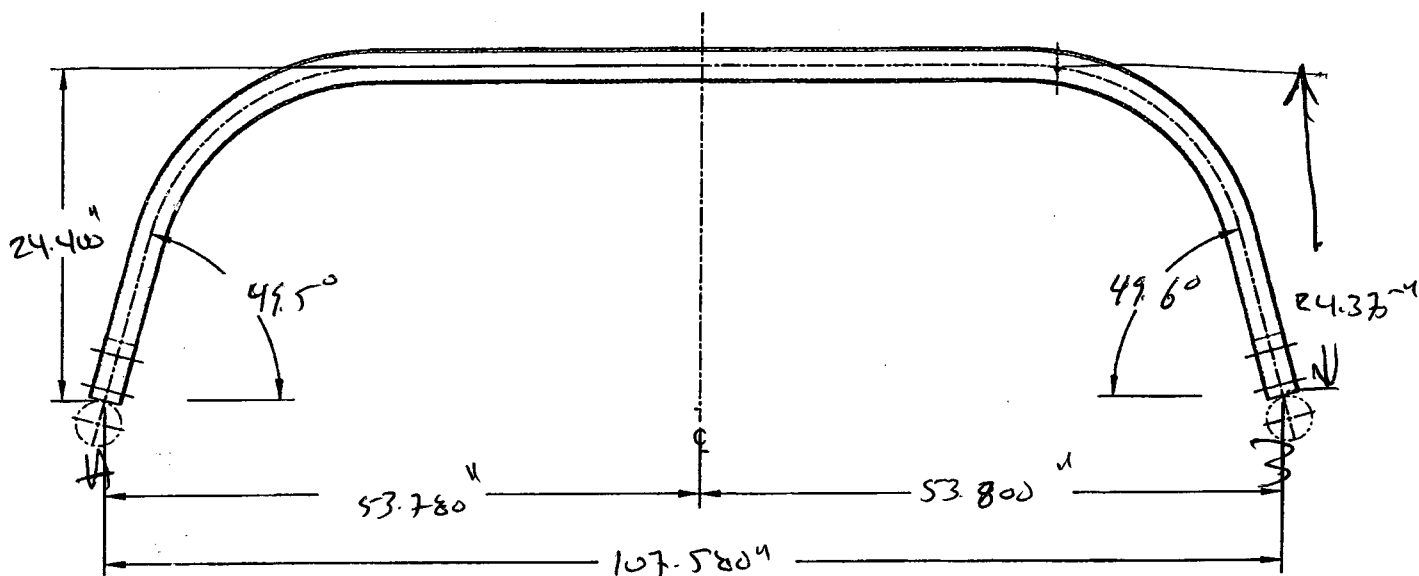
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DART AEROSPACE LTD		Work Order:	63538
Description: Crosstube High Aft (205/212)		Part Number:	D212-664-201
Inspection Dwg: D212-664-241 Rev: D			Page 1 of 1

Required Dimension	Min	Max
Height	24.17	24.43
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70



Comments

QC15 Inspection	8
Date	10/11/12

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. C	KJ/JLM	
C	10.04.01	Dwg Rev updated	KJ	

1
 53.780
 53.800
 107.580

W/O:		WORK ORDER CHANGES					
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Item	Qty -241	Qty -241B	Part Number	Description
1	X		D212-664-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
2		X	D212-664-241B	CROSSTUBE ASSEMBLY (214 HIGH AFT)
3	1	1	D6006-129	CROSSTUBE
4	2	2	D2940-1	SUPPORT
5	4	4	D3595-063-530	RUBBER CUSHION
6	4	4	MS21920-28	CLAMP (OR MS21920-30)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6006-129
FINISHED LENGTH = 124.362±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: D212-664-241 = 44.2 lbs (PER IIN-D212-664)
D212-664-241B = 44.2 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 63535

20-11-09

RELEASED
2009-10-29

D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -241B (ZN D4-2, B4-2); REMOVED REF & ADD TOLERANCES (ZN D8-3 & C4-3, C6-3 & A8-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -1009 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	92	DRAWING NO.	REV. D
MFG. APPR.	IS	D212-664-241	SHEET 1 OF 4
APPROVED	142	TITLE	SCALE
DE APPR.	#	CROSSTUBE ASS'Y (205/212 HI AFT)	NTS
DATE	09.09.30	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE, OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

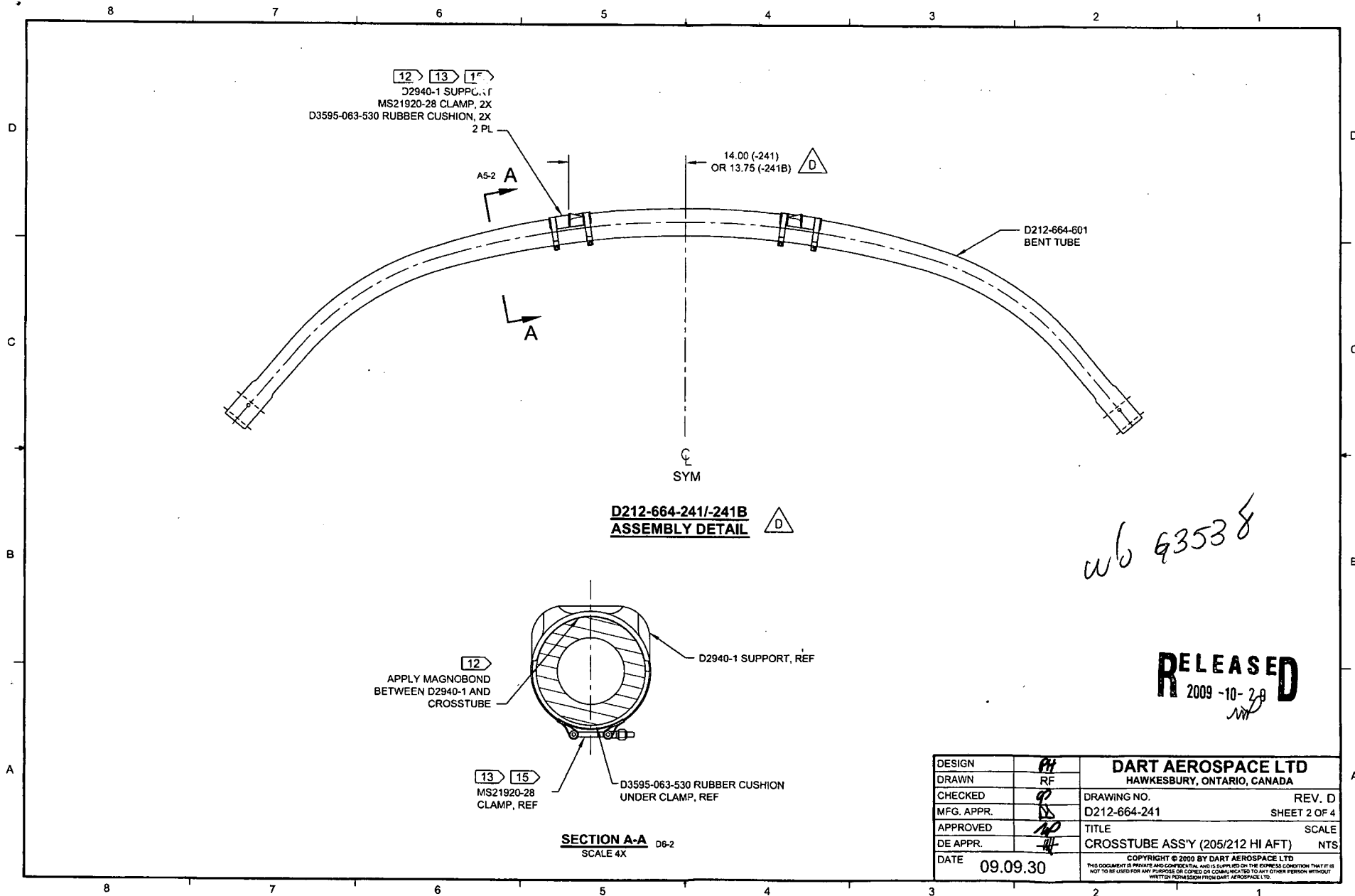
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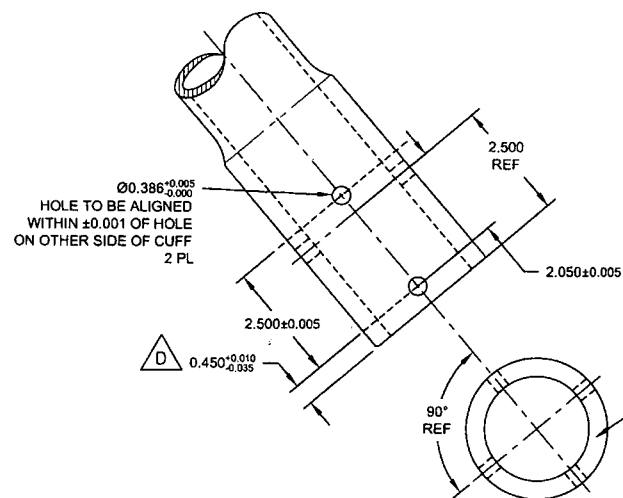
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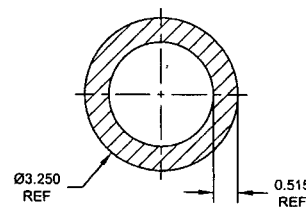
D212-664-601 10 D
BENDING AND DRILLING DETAIL

wb 43538

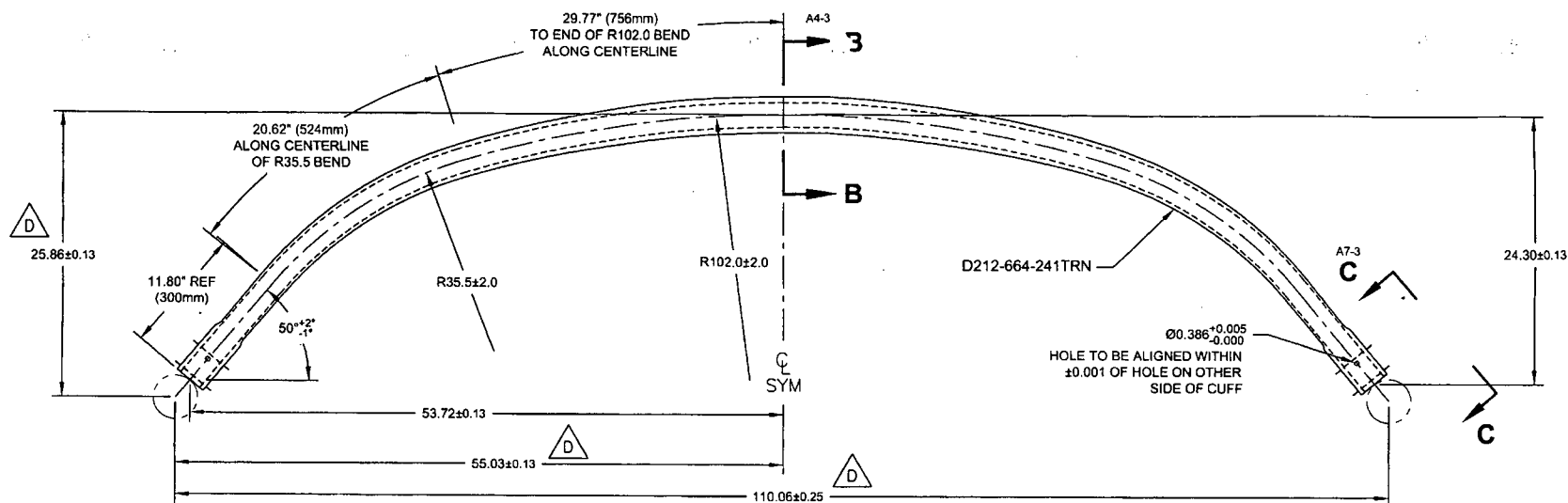
RELEASED
 2009-10-29



VIEW C-C: CUFF DETAIL D2-3
 SCALE 3X



SECTION B-B D4-3
 SCALE 4X



DESIGN	<i>PH</i>	DART AEROSPACE LTD
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	<i>92</i>	DRAWING NO. REV. D
MFG. APPR.	<i>SS</i>	D212-664-241 SHEET 3 OF 4
APPROVED	<i>AP</i>	TITLE SCALE
DE APPR.	<i>HL</i>	CROSSTUBE ASS'Y (205/212 HI AFT) NTS
DATE	09.09.30	COPYRIGHT © 2000 BY DART AEROSPACE LTD
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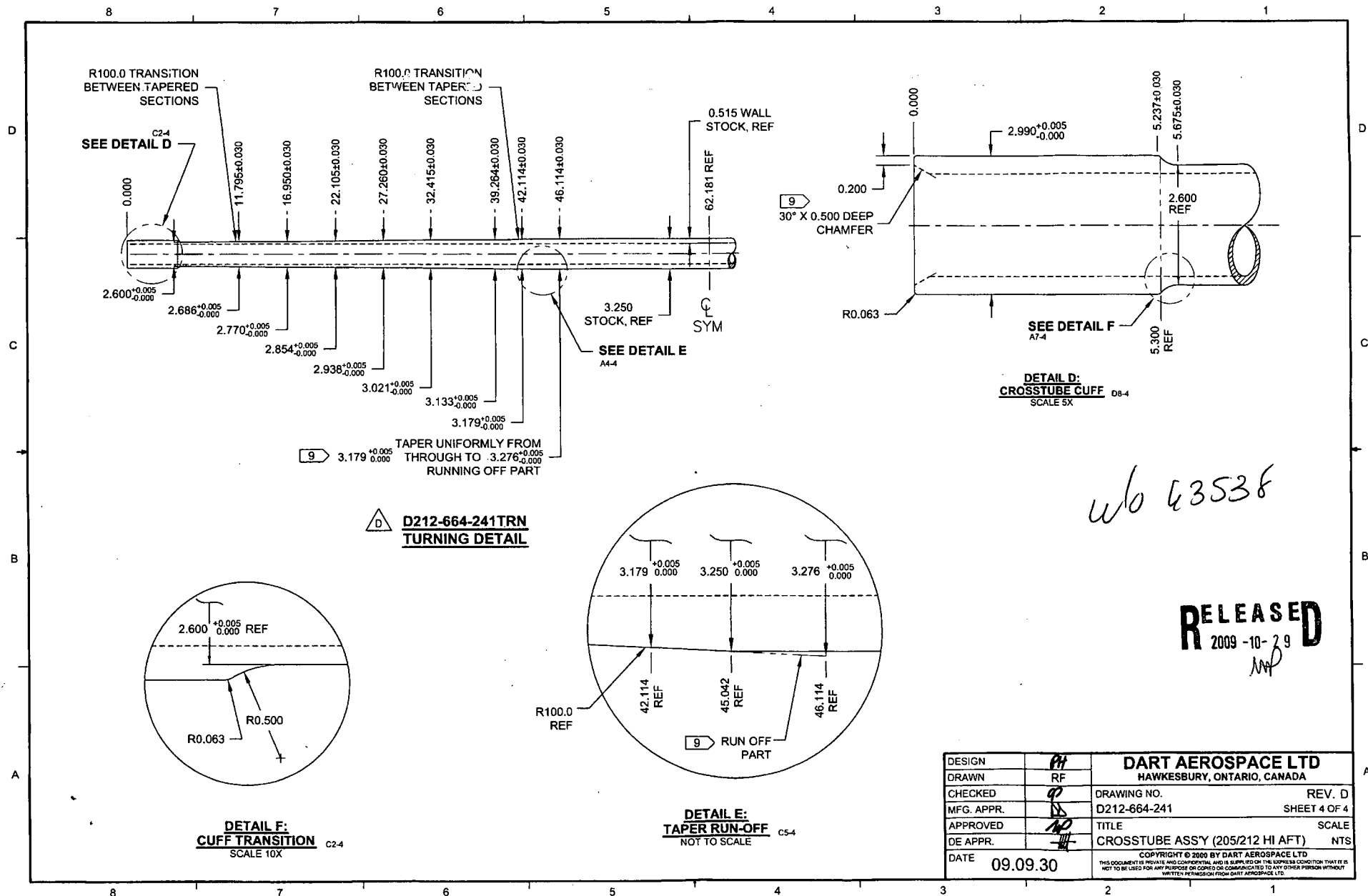
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



ACUREN

LIQUID PENETRANT TEST REPORT

P- 05491

PAGE 1 OF 1

CLIENT

ATTENTION

ADDRESS

PROJECT

ITEM(S) EXAMINED

DATE

ACUREN JOB NO.

PO/NO.

WORK LOCATION

ACCEPTANCE STD.

TIME

AM

PM

REV./DATE

JOB DESCRIPTION

PROCEDURE NO. LT-003 REV./DATE 2008

TECHNIQUE NO. LT-002 REV./DATE 2008

PART NO.

MATERIAL

THICKNESS

SCOPE

TEST DETAILS

METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED
FAMILY BRAND	MAGNAFLUX		BLACK LIGHT S/N 13790	OUTPUT > 1000 μ W/cm ²	<input type="checkbox"/> AMBIENT < 2 fc
ENETRANT	2L-67	MINIMUM DWELL TIME 10 MIN.	LIGHTING EQUIP.	<input type="checkbox"/> FLASHLIGHT	<input type="checkbox"/> TROUBLELIGHT
ENETRANT REMOVER	H ₂ O	MINIMUM DRY TIME >10 MIN.	OTHER		
DEVELOPER	SKD-52	MINIMUM DWELL TIME 10 MIN.	LIGHT METER S/N		CAL DUE DATE FEB 05-2011
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY		

TEST SURFACE

SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED	<input checked="" type="checkbox"/> CLEAN BARE METAL
SURFACE TEMPERATURE	<input type="checkbox"/> < -4°C/ 20°F	<input type="checkbox"/> -4°C/ 20°F TO 10°C/ 50°F	<input checked="" type="checkbox"/> 10°C/ 50°F TO 52°C/ 125°F	<input type="checkbox"/> > 52°C/ 125°F	

RESULTS- (☐ METRIC ☒ IMPERIAL)

ITEM	COMMENTS	ACCEPT/REJECT
#1	CROSS TUBE - W.O. ID 63527	✓
#2	CROSS TUBE - W.O. ID 63528	✓
#3	CROSS TUBE - W.O. ID 63533	✓
#4	CROSS TUBE - W.O. ID 63539	✓
#5	CROSS TUBE - W.O. ID 63744	✓
#6	CROSS TUBE - W.O. ID 63745	✓
#7	4 X MOUNT(S) - W.O. ID 61889	✓

CROSS TUBE AFT

ITEM ID: D 206-667-203 (ITEMS #1, 2)

ITEM ID: D 212-664-201 (ITEMS #3, 4, 5)

ITEM ID: D 212-664-101 (ITEMS #5, 6)

CROSS TUBE FWD

MOUNT

ITEM ID: D 3687-1 (ITEM #7)

10-11-23

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood at all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as presentations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE

TECHNICIAN (SIGNATURE):

NAME (PRINT):

Matt Murdoch

PRINT

Matt Murdoch

SIGNATURE

Yves DesRoches

1ST TECHNICIAN

CGSB LEVEL 2 SNT LEVEL 2

CGSB REG. NO. 3049

CGSB LEVEL SNT LEVEL

CGSB REG. NO.

DTR # E63039

REPORT

REVIEWED BY:

NAME

INITIALS

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY

PT Sept 2005